

Extended Abstract

A process model of using digital (open) learning materials in teaching and learning activities

Relationship with OER-Recommendations

This presentation and the research on which it is based relate to the Recommendation:

(ii) Developing supportive policy

12. Member States, according to their specific conditions, governing structures and constitutional provisions, should develop or encourage policy environments, including those at the institutional and national levels, that are supportive of effective OER practices. Through a transparent participatory process that includes dialogue with stakeholders, Member States are encouraged to consider the following:

(f) addressing the inclusion of OER in transforming education, adjusting, enriching or reforming curricula and all forms of learning so as to exploit OER potentials and opportunities, and encouraging the integration of different teaching methods and forms of assessment to motivate the active use, creation and sharing of OER; and assessing the impact of OER on inclusive and equitable quality education;

To support teachers and learners more effectively in their use of digital learning resources in teaching and learning activities, the development and use of a process model of the activities they both perform has proven to be very useful. In this presentation, we present this process model, based on the experiences in the Dutch Higher Education innovation program [“Acceleration plan for educational innovation with ICT”](#). The model shows the activities a lecturer and a student undertake to accomplish their ‘optimal mix’ of learning resources. Optimal mix is defined as the mix of digital learning resources that, in the eyes of the lecturer or student, supports most effectively his or her teaching and learning process that should lead to the achievement of the learning outcomes.

The process model distinguishes two scenarios:

1. Scenario 1: the **reading list**.
2. Scenario 2: the **instruction**.

Scenario 1: the reading list

Figure 1 shows the process model for scenario 1.

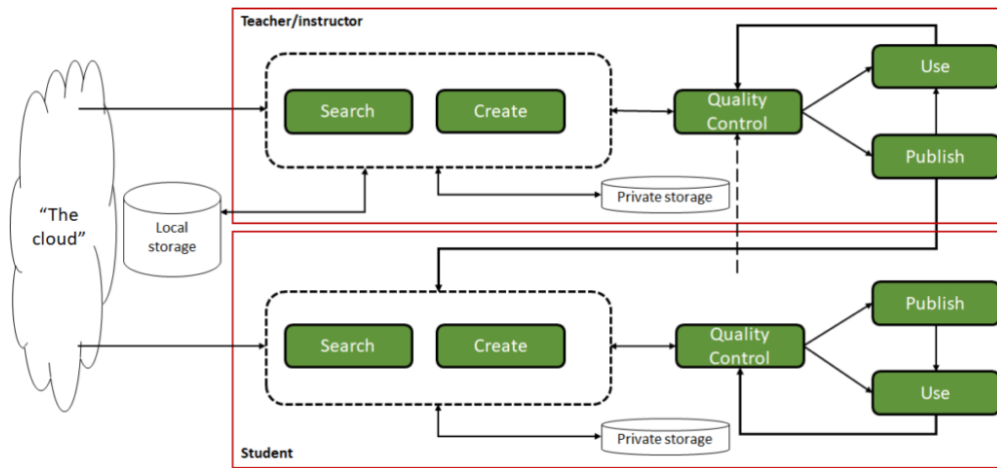


Figure 1. Creation of optimal mix of digital learning materials, process model for scenario *reading list*.

A **teacher/lecturer** will compile a mix of digital learning resources that best fits the learning outcomes to be achieved and his/her own educational process. That composition is visualised by the dotted shape in the diagram. The lecturer searches for digital learning resources that can be either open or closed. Those resources can already be in his/her possession (in a private database, generally a hard drive), a local database (for example a departmental or institutional repository of learning resources, often a shared network drive), or in the “cloud”. In many cases, a teacher herself/himself will also create digital learning resources, which also includes mixes and adaptations of learning resources found elsewhere. The mix of digital learning resources will be subject to a quality control process, which may or may not be explicit. This quality control can also be carried out by people other than the teacher (for example, colleagues). Ultimately, the mix of learning resources will either be published (i.e. made available to students) or used in educational activities. In the latter case, those materials may not be made available to students. For example, a video that is shown in the lecture hall but that is not distributed further. It may also be the case that educational resources used in the educational activity become available to students. These might include copies of the slides that the teacher uses in the educational activity. Publishing the optimum mix of educational resources in any case involves specifying the titles of the educational resources (usually textbooks) that must be studied, whether or not it is compulsory (the reading list).

Experiences with the use of learning materials can be input for a quality check and possibly lead to adjustment of the optimal mix, during or after the course for which the optimal mix is composed. Consider, for example, a situation in which students during an educational activity indicate that they do not possess the prior knowledge that the teacher assumed was present. The teacher can then supplement the optimal mix with learning materials that fill in the knowledge gap. Feedback on the quality by students can also take place via a course evaluation (represented in the figure by the dotted arrow).

Based on the published mix of learning resources (including the reading list), the **student** will compile his/her own mix of learning resources. While studying or during an educational activity, the student can search for or create additional learning resources and add these to his/her optimal mix of learning resources. Quality control is expected to be implicit and based on the usefulness that the student experiences in achieving the formulated learning objectives. Think, for example, of the experiences the student has when doing exercises to master a certain mathematical concept. When the student is not able to do all the exercises, he or she will look for additional sources to gain knowledge that is apparently not yet present. Such practices are described in more detail in (Schuwer, Baas & De Ruijter, 2021). A student may decide to publish parts of his or her mix for third parties. For example, making lecture notes available to fellow students in a study association.

Scenario 2: the instruction

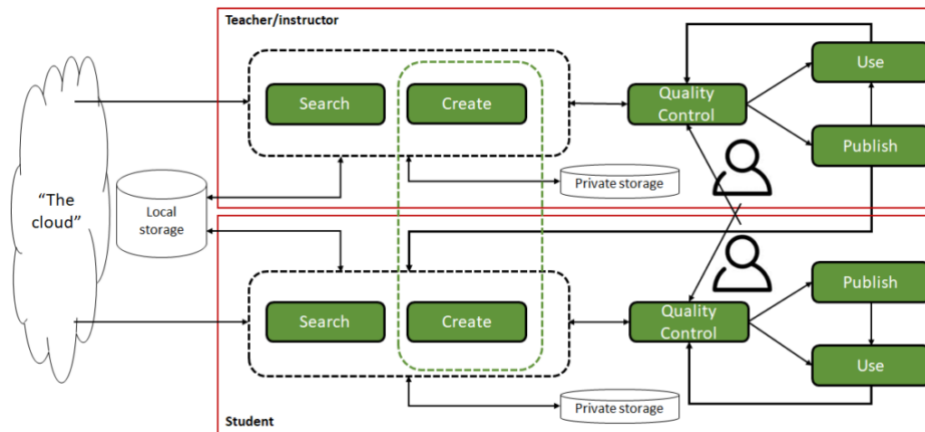


Figure 2 Creation of optimal mix of learning materials, process model for scenario *instruction*.

Figure 2 shows the process model for scenario 2. The activities correspond largely to those described in scenario 1. The teacher defines an assignment. If necessary, a list of recommended literature for carrying out the assignment is compiled and, if necessary, the teacher also produces teaching materials. All of this is published and made available to students (the instruction). What was written about quality control on the teacher's side in scenario 1 also applies in this scenario. Based on the instructions, the student starts compiling his/her optimal mix of learning resources.

In this scenario, students can also publish their own (learning) materials (open or semi-open), both in local storage and in the "cloud". The student will then also have access to local storage for materials in his/her optimal mix. This situation arises, for example, when students create and publish learning materials as part of their learning process. Such didactic forms of working characterize educational approaches such as Open Pedagogy and Open Educational Practices. Quality control of the materials to be published can be carried out by both the teacher and the student. Conversely, when a teacher and students jointly create and publish educational resources (shown by the green dotted shape in the figure), the student can also be part of the group that carries out a quality check for the teacher.

Not shown in the figure is the situation where learning materials created by a student during his/her learning process are added to the optimal mix by a teacher the next time the course is given.

Finally, to develop and implement effective OER adoption policies, it is crucial to have a good understanding of the education and learning processes within institutions in which OER, and in general digital learning resources, play a role. Within the framework of the Dutch Higher Education innovation program a process model has been developed that gives that insight.

Acknowledgements

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Reference

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